Responsibilities of Being the Land Grant Institution for the State of Utah

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In 1862, President Abraham Lincoln signed the Morrill Act, which created the U.S. land grant institution system. Under this act, at least 30,000 acres of federal land was awarded to each state to support public institutions of post-secondary education. Revenue from the land was used to establish and support the institutions so that tuition would not be out of reach of the "industrial classes". The Hatch Act, passed in 1887, established the Agricultural Experiment Stations (AES) within the land grant institutions and currently supports research in agricultural-related areas as well as rural community development and societal issues. The Smith Lever Act, passed in 1914, mandated outreach to the public through Cooperative Extension, another component of the land grant institutions. Through these funding mechanisms, the 106 land grant institutions that now exist in the U.S. provide education, research and outreach to citizens in every state and U.S. territory. Utah's land grant institution is Utah State University, located in Logan, Utah. This institution upholds the land grant mission by providing education, basic and applied research, and a variety of outreach programs across the state.

Key words: Land grant, education, research. extension, Utah

Introduction

Abraham Lincoln, the 16th President of the United States of America (USA), is known for many important accomplishments that helped rebuild the nation divided by the Civil War (or "War Between the States) that lasted from 1861 to 1865 (Donald, 1996; 2001). During his presidency, Lincoln signed into law several landmark legislative acts that expanded the USA, including the Homestead Act of 1862 that led to settlement of the western USA by homesteaders and the Pacific Railway Act of 1862 that resulted in the Transcontinental Railway which was completed in 1868. Another important piece of legislation that the President signed was the Morrill Act of 1862. Because Lincoln felt strongly that education was a key component of the nation's rebuilding and expansion, the objective of the Morrill Act was to create the land grant system of post-secondary education using revenue from federal land to finance these institutions. An excerpt from the Morrill Act states that "the endowment, support, and maintenance of a college where the leading objects shall be, without excluding other scientific and classical studies, and including military tactics, such branches of learning … related to agriculture and the mechanic arts … to promote … the education of the industrial classes …" (Morrill Land Grant College Act, 1862).

Prior to that time, universities in the USA were privately owned and very expensive, so a college education had been viewed as something only available to the wealthy. As described in the Morrill Act, the land grant institutions would provide access to a college education for the "industrial classes", thereby extending education to all citizens across the nation.

The Morrill Act also addressed the rebuilding of cultivated land that had produced food for the Southern USA people, as well as exports to the Northern USA and foreign markets, but was devastated during the Civil War. Thus, the original focus of the land grant institutions was agriculture and the "mechanical arts" which emphasized the design, construction and use of

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equipment needed to grow, harvest and process food. The area of mechanical arts has been expanded over the years and is now better known as engineering.

The Morrill Act included detailed language for financing the land grant institutions. An excerpt of the Act states, "That there be granted to the several States, for the purposes hereinafter mentioned, an amount of public land, to be apportioned to each State a quantity equal to thirty thousand acres for each senator and representative in Congress to which the States are respectively entitled by the apportionment under the census of 1860: Provided, That no mineral lands shall be selected or purchased under the provisions of this Act." (Morrill Land Grant College Act, 1862). The act further stipulated that revenue from the set-aside federal land, whether from production off the land or by selling the land to the public, would be placed in a state-held endowment and the earnings of the endowment would be used for support of the land grant institution. While tuition would be charged to the students, the amount of tuition would not be a barrier for attendance.

Other federal legislative acts expanded the mission of land grant institutions beyond education and into research and outreach. In 1887, the Hatch Act established federal funding that would support the Agricultural Experiment Stations affiliated with or located within the land grant institutions (Hatch Act, 1887). The federal money would be distributed to each state based on agricultural production and population demographics, with the expectation that state funding would also be provided. Because of the original emphasis on agricultural research, most stations contained tracts of land devoted to agricultural crops and animals.

In 1914, the Smith-Lever Act created the Cooperative Extension system (Smith-Lever Act, 1914). This unit was also supported with federal and state funds, and its formation would provide research based information to the citizens of each state. Similar to the Agricultural Experiment Station system, the first area of extension focused on agricultural production practices but was soon expanded into issues of the home, referred to as family consumer science.

The Morrill Act of 1862 has led to the formation of (51) "1862 land grant institutions". Each of the 50 states of the USA has a land grant university as well as the District of Columbia. However, because of pronounced racial segregation in the late 1800's, black students were not able to attend the 1862 institutions when they were first created. Therefore, in 1890, the 2nd Morrill Act was passed which created land grant institutions specifically for black students (Second Morrill Act, 1890). Currently, there are 19 "1890 land grant institutions" primarily in the former Confederate states. In 1972, an amendment to the 2nd Morrill Act created five territorial land grants (American Samoa, Guam, Northern Marianas, Puerto Rico and the Virgin Islands) and another amendment in 1994 created 31 Native American or tribal institutions located on or near Native American reservations. Thus, these legislative actions have provided for the creation and support of 106 land grant colleges and universities (Fig. 1), all with missions of education, research and outreach.

Current Status of the Land Grant Institutions

Today's land grant institutions reach far beyond their original mandates of education in "agriculture and mechanical arts". While there is a reduced emphasis on the production of food, all but one land grant institutions still maintain a College of Agriculture. However, there is an increased emphasis on technology, basic science, societal needs and professional career preparation such as teachers, engineers and dieticians. Many land grant institutions offer degree programs similar to other higher education institutions, such as bachelor's, master's and doctoral degrees, although they rarely support medical and law schools.

A common theme for the land grant institutions is the application of basic and applied research, supported by the Agricultural Experiment Stations (AES), that contributes solutions to state-wide issues. The AES research is often prioritized and conducted through partnerships with state and federal agencies. Over the last 100 years, the scope of research supported by the AES system has shifted from local application to regional, national and global issues and solutions.

Similar to the evolution of the AES, Cooperative Extension has evolved into a robust delivery system of research based information across a broad range of topics. While one-on-one consultation still occurs, Extension personnel have expanded their delivery of information by creating active websites and electronic delivery. The emphasis of Extension continues to be on unbiased information to inform rather than endorsement of products or policies. In contrast to extension in other countries, Cooperative Extension is not in-

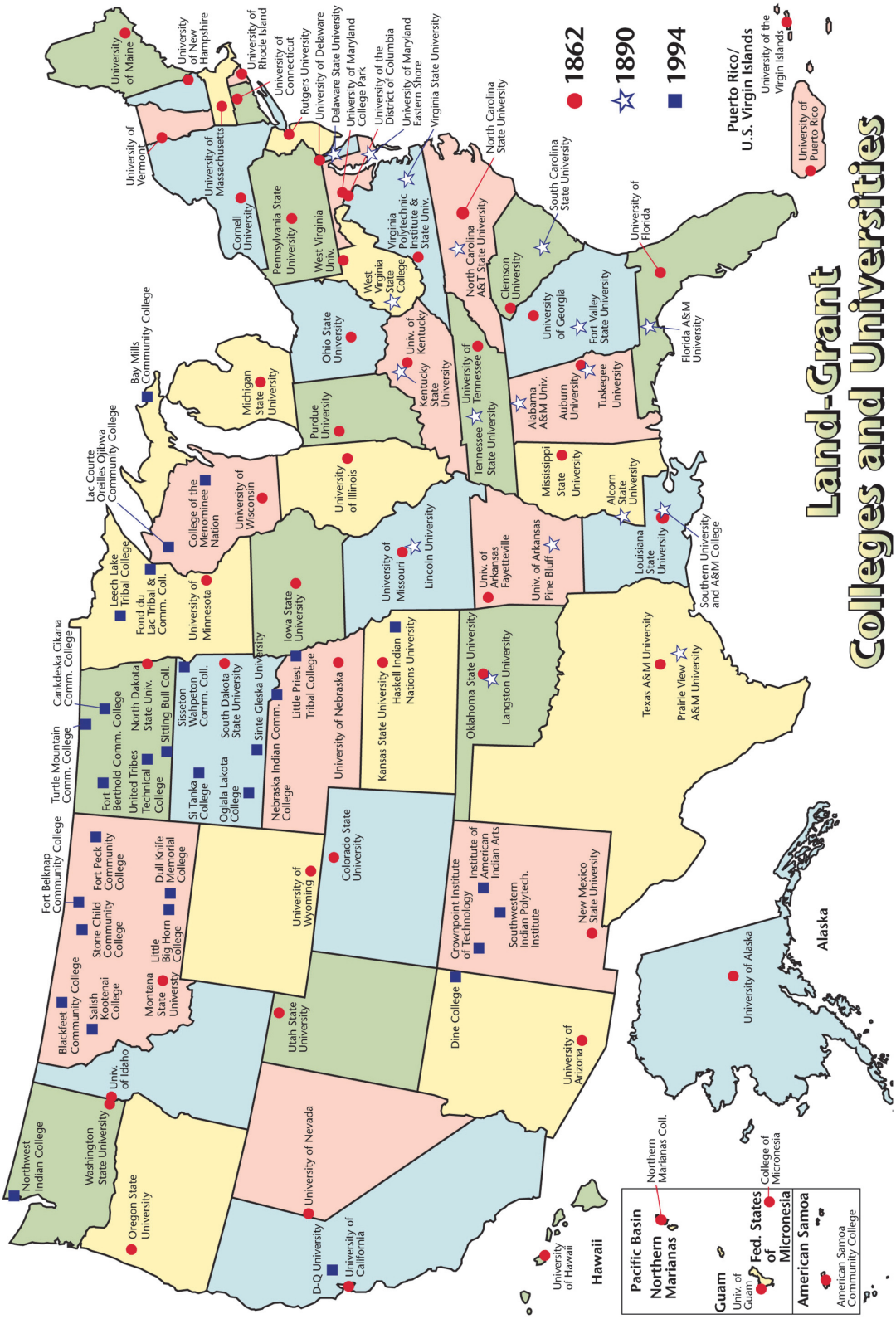

Fig. 1. Location of the 106 USA land grant institutions (S. Boyer, Utah State University Extension, Logan, UT).

volved in policing state or federal regulations and most Extension programs are delivered free or on a cost-recovery basis.

Both state and federal funding is authorized for support of the AES and Extension programs across the system of land grant institutions. The ratio of state to federal funding for these two programs differs significantly across the states and depends on the ability and inclination of the state's legislature to invest in their missions. As research programs expand into high technology, expensive operations with the involvement of multiple people, researchers funded through AES seek additional funding from outside sources, such as federal competitive grants, in order to maintain a robust program.

Educational Mission of Utah State University

Utah State University is the land grant institution in Utah. It was created in 1888 in Logan and referred to as the Utah Agricultural College or the UAC. Logan was designated as the home of the UAC as a consolation prize for not being awarded the site of the state prison. Two years later, 14-year-old Miss Vendla Berntson was enrolled as the Utah Agricultural College's first student. USU's first graduating class of 1894 included eight graduates, all receiving business degrees (Utah State University, Histories and Traditions).

The USU institution has been on a steady rate of expanse over its 126-year history. In 2013, the student enrollment included 28,000 undergraduate and graduate students enrolled in 27 certificate programs, 18 associate's degrees, 170 bachelor's degrees, 96 master's degrees, and 40 doctoral programs including the Doctoral of Veterinary Medicine program which received Utah legislative funding in 2011 and enrolled its first class of 30 students in 2012. For a more complete list of degrees, please see the Utah State University Degrees website at http://www.usu.edu/degrees/index.cfm?browse.

While the majority of USU students are enrolled in classes on the Logan campus, almost 11,000 students are taking classes in 27 regional campuses and centers located across the state (Fig. 2). Educational opportunities across the USU system has been greatly expanded using interactive video conferencing (IVC) and online courses. Using the IVC system, a class with one instructor can be delivered simultaneously to multiple sites. A student from a regional campus who participates in the USU system-wide graduation ceremony at the conclusion of a degree program may be on the Logan campus for the first time.

Fig. 2. Location of the main USU Logan campus (blue symbol), as well as the 27 regional campuses (green symbols) and centers (brown symbols) that comprise the Utah State University educational system (J. Wright, Utah State University Regional Campuses and Distance Education, Logan, UT).

Research Mission of Utah State University

The Utah Agricultural Experiment Station (UAES) receives approximately $12M from the state and $2M from the federal government to conduct research that fits within the mandates of the United States Department of Agriculture (USDA). This funding is used to support faculty in 13 departments across USU through salary and benefits, operating funds, student stipends, grants for travel, equipment and research projects, access to livestock and agronomic farms, and analytic and molecular laboratories. In order to be considered as a UAES researcher, faculty members submit proposal for three- to five-year projects. After review and revision, the proposals are approved and the UAES administration works with department heads

and college deans to allocate money for support of the project. Besides partial funding of faculty salaries and benefits, project funds are most commonly used for undergraduate and graduate student support. While the majority of UAES programs are in the Colleges of Agriculture and Natural Resources, faculty in the Colleges of Education and Human Services, Humanities and Social Sciences, Engineering, and Science are also supported with UAES funds.

Faculty receiving UAES funds are encouraged to deliver research outputs to the public, including federal and state agencies, with an emphasis on measurable outcomes and impacts. The UAES projects are primarily focused on western U.S. issues of land, water and economic development in rural communities. While a wide range of programs are supported by UAES, some examples of land projects include livestock/wildlife interactions, healthy rangelands and intensive pasture grazing. UAES also supports programs that will contribute to the sustained availability of water for urban, industrial and agricultural uses. These projects include research on the development of plant varieties with reduced water requirements, more efficient use of water in agricultural and horticultural practices, and prediction of climate changes and their effects on water availability. In the area of economic development, UAES projects have focused on small business development, economic analyses of agricultural commodities and natural resource utilization, and work force needs primarily in rural communities. For a more complete list of projects, please see the Utah Agricultural Experiment Station website at http://uaes.usu.edu/.

Extension Mission of Utah State University

Utah State University Extension receives approximately $12M from the state, $2M from the federal government and $1M from 28 Utah counties with Extension offices. In addition to funding, the counties provide space and staff for the offices. Federal and state Extension funding is used primarily for salaries and benefits, with about 10% of the funding used for operating support. Major program areas for Extension are designated by USDA and impacts and outcomes of the programs are reviewed annually.

Around 140 USU faculty members with Extension assignments are housed in 13 academic departments and in 31 offices located across Utah (Fig. 3). The USU faculty members housed in academic departments usually hold PhD degrees and provide depth of information in specific areas; hence, these faculty are often referred to as "specialists". The USU faculty members located across the state most often have Master's of Science (MS) degrees and are responsible for delivery of information needed by their communities or counties; hence, they are often referred to as "county agents". In general, the specialists provide in-depth information on topics that the agents deliver into their communities. The primary objective is for specialists and agents to work closely together to design programs that are timely and relevant.

Extension programs cover a wide range of topics, from traditional programs in agronomy, livestock production, horticulture and family consumer science to recently emerging areas of family finance, nutritional information and youth leadership. Examples of recently developed and delivered programs by USU Extension faculty include a state-wide Master Gardener program, Master Preservers, Power Pay (a debt reduction program), Stepfamily Relationships, Healthy Marriages and 4-H robotics clubs. The wide range of programs that are delivered by USU Extension can be found at http://extension.usu.edu/.

While people in rural communities understand the outreach mission of Extension, reaching audiences in urban communities has been challenging. Use of social media has increased awareness of the quality programs delivered by Extension faculty. State agencies, such as Utah Work Force Services, are turning more to USU Extension for delivery of outreach programs because of its long and successful history in program delivery. Also, high level positioning of Extension materials in internet search engines has also connected USU Extension with new customers. The 4-H youth development program, recognized world-wide by its green cloverleaf, has sustained its popularity over time, with over 100,000 Utah youth and 10,000 Utah volunteers enrolled in the last five years. 4-H programs have expanded from the traditional clubs and summer camps to include after-school programs located in the schools. There is still a misconception that 4-H is only available to youth with livestock but the increased emphasis on youth development and leadership has attracted many urban youth and volunteers into the program.

There has been a significant effort by USU to expose undergraduate students to Extension as a method of recruiting future Extension employees. One success-

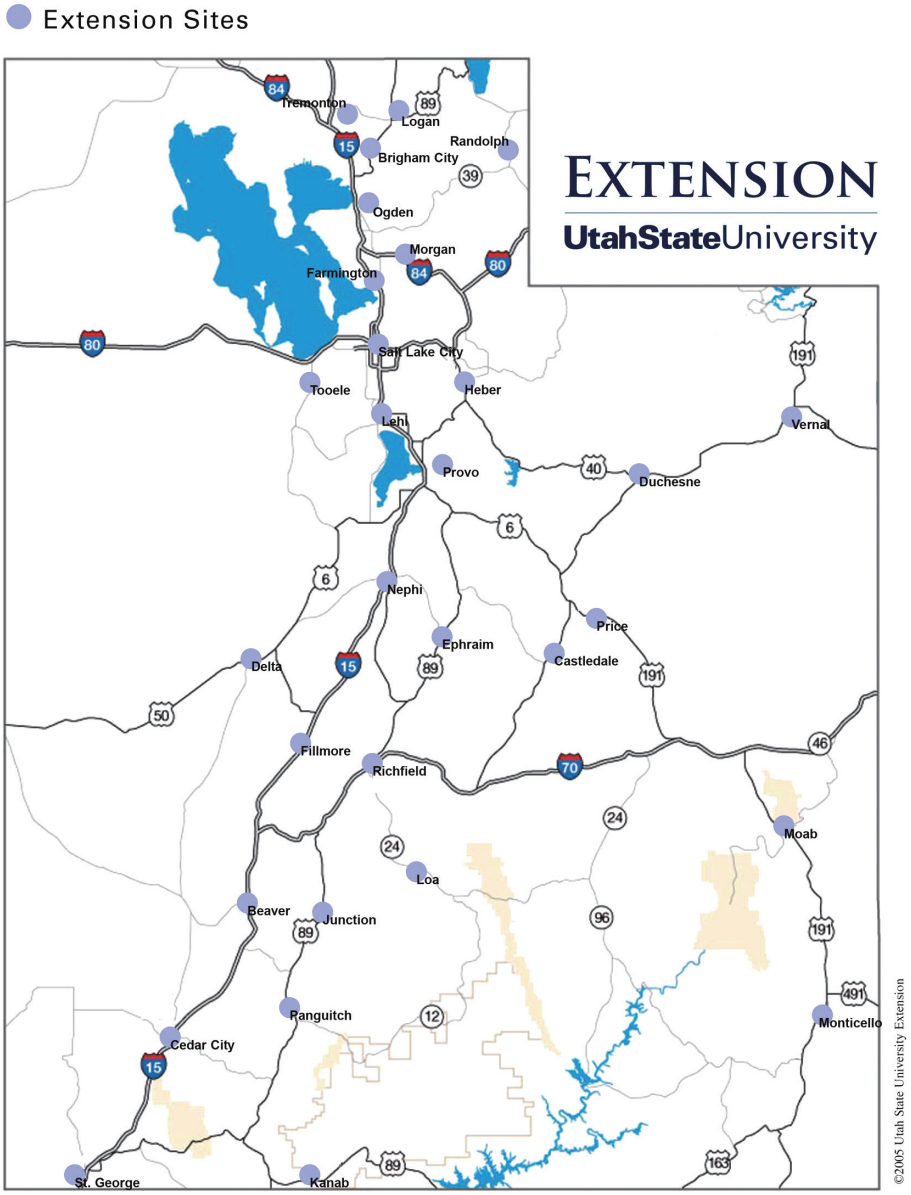

Fig. 3. Location of the county offices and sites (blue circles) that comprise the Utah State University Extension System (S. Boyer, Utah State University Extension, Logan, UT).

ful method has been the use of USU Extension student internships with $5,000/year awards. These internships are advertised through the USU Extension website and USU Student Employment, reaching students interested in a job during the school year and/or summer. The program has grown significantly with 25 interns in 2010 to 99 interns in 2013. USU Extension faculty members are extremely supportive of the program because of the tremendous contributions these students make to new program design and delivery.

Conclusions

The concept of the U.S. land grant institution was created in a post-war era when education of the working class population was paramount. From that beginning in 1862, the land grant system now encompasses 106 institutions that deliver education, research and outreach across the country. These institutions are committed to learning, discovery and engagement in today's world and they contribute to new pathways for

the future. There is no doubt that this form of higher education has been a success.

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